GOVERNMENT OF THE DISTRICT OF COLUMBIA

DEPARTMENT OF CONSUMER AND REGULATORY AFFAIRS
ENVIRONMENTAL REGULATION ADMINISTRATION
2100 MARTIN LUTHER KING, JR. AVENUE S.E.
WASHINGTON, D.C. 20020

August 11, 1993

Ms. Kelly Bunker
U.S. Environmental Protection Agency
841 Chestnut Building
6th Floor
Philadelphia, PA 19107

Dear Ms. Bunker:

Please find enclosed a copy of the report titled "The District of Columbia's Oxygenated Fuel Compliance Program." This report describes the work of the Compliance and Enforcement Branch during the winter of 1992/93 to ensure that the oxygenate fuel program was properly carried out in the District of Columbia.

We welcome your comments and/or suggestions.

If you have questions or need further information, please contact me at (202) 404-1180, extension 3084.

Sincerely,

William G. Gillespie

William G. Gillespie
Chief, Compliance and Enforcement Branch
Air Resources Management Division

THE DISTRICT OF COLUMBIA'S OXYGENATED FUEL COMPLIANCE PROGRAM

1992/1993

August 11, 1993

The Air Resources Management Division
Compliance and Enforcement Branch

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I. Background and Purpose

Carbon Monoxide is a common air pollutant in urban environments. High concentrations of carbon monoxide are often observed in urban areas because of mobile source emissions, that is, emissions from auto and truck traffic. Carbon monoxide concentrations reach their highest levels in urban areas during the winter months because of meteorological conditions.

The use of oxygenated fuel is a potentially effective method for reducing carbon monoxide emissions from mobile sources. Oxygenated fuel is fuel that contains additives that contain oxygen. Oxygen additives, or oxygenates, enhance fuel combustion and help offset fuel-rich operating conditions, lowering mobile source carbon monoxide emissions.

To help reduce carbon monoxide pollution, the Clean Air Act Amendments of 1990 mandate the use of oxygenated fuel in areas where carbon monoxide concentrations are high. Many metropolitan areas across the United States do not meet the National Ambient Air Quality Standards (NAAQS) for carbon monoxide. These areas are termed "non-attainment areas." The 1990 Clean Air Act Amendments require states to implement oxygenated fuel programs in Metropolitan Statistical Areas (MSA) that contain certain non-

attainment areas[1]. The District of Columbia MSA is one of 39 MSA's across the U.S. whose constituent jurisdictions must implement and enforce an oxygenated fuel program.

The U.S. Environmental Protection Agency has set guidelines for the period of time during a year a qualifying MSA must use oxygenated fuel. This oxyfuel season, or control period, is based on the portion of the year when the non-attainment area historically experiences its highest carbon monoxide levels. In the District of Columbia MSA, the control period is from November 1 through the last day in February.

The Compliance and Enforcement Branch (CEB) of the District of Columbia's Air Resources Management Division (ARMD) is responsible for enforcing new oxygenated fuel regulations within the District of Columbia. During the first oxyfuel season, the Compliance and Enforcement Branch had two goals.

(1) Inspect a random distribution of service stations and determine the oxygen content of gasoline samples taken at each station. Both independent service stations and stations affiliated with large oil companies would be inspected. Federal regulations require all gasoline in a

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[1] Only non-attainment areas with carbon monoxide design values of 9.5 parts per million or more are required to implement an oxygenated fuel program.

MSA with an oxyfuel program[2] to contain no less than 2.7 percent oxygen-by-weight.

(2) Trace the flow of gasoline from suppliers to retailers. Tracing the flow of fuel from wholesale suppliers to retail stations would help the Compliance and Enforcement Branch identify the supplier of any non-oxygenated fuel sold in the District.

[2] Some areas employ an averaging program where oxygen credits may be bought and sold. Where these programs are in effect, all gasoline does not have to be 2.7 percent oxygen-by-weight. The District of Columbia, however, does not permit averaging so all gasoline must contain 2.7 percent oxygen-by-weight.

II. The Inspection and Sampling Program

In accordance with EPA's recommendations, the Compliance and Enforcement Branch planned to inspect at least 20 percent of the retail service stations in the District. 29 of 135 service stations or 21% of gasoline retailers that operate in the District were in fact inspected. During these inspections, CEB staff obtained gasoline samples and inspected the station's pumps for proper oxyfuel labeling.

a. Sampling Technique

When CEB personnel arrived at a service station, they identified themselves to station employees and explained their purpose. Approximately 0.1 - 0.2 gallons of gasoline were then pumped into a container to clear the nozzle of gasoline that might not be representative of fuel dispensed from the pump. After the nozzle was cleared, 50-100 milliliters of gasoline were dispensed into a sample container which was sealed and labeled with the date, octane rating and a sample number. This process was repeated for every grade of gasoline available at the station. After collecting samples, the inspectors paid for the gasoline and poured unsampled gasoline into the vehicle the inspectors were driving. The station manager's name and telephone number were recorded and the pumps were inspected for proper oxyfuel labeling. This procedure was repeated at every inspection site.

Sample collection was performed once a week for the last five weeks of the 1992/93 oxyfuel season. 15 to 20 samples were transported weekly to the Maryland Fuel Testing Lab in Jessup, MD for analysis. The lab used an approved EPA method (ASTM D-4815-89) to determine the percent oxygen-by-weight for each sample. Inspections were performed by Philip Kingsley and Renee Carter.

b. Results

(1) All suppliers surveyed, including local and major terminals, reported that their fuel contained the oxygenate methyl tertiary butyl ether (MTBE).

(2) Tables 1 and 2 identify the service stations sampled and the results of the fuel analysis. Overall average percent oxygen-by-weight for each gasoline grade is also given. All but one of the samples had a percent oxygen-by-weight value between 2.4 - 3.3. Fuel oxygenated with MTBE which falls within this range is defined by EPA as legally oxygenated.

Table 1: Gasoline Service Stations Sampled in the 1992/93 Oxyfuel Compliance Program

BRAND	MANAGER	ADDRESS	PHONE	PUMP[3] LABEL
Amoco	Kenny Arnold	2500 Penn Ave. SE	--------	N
Amoco	L.E. Patrick	908 Florida Ave. NW	387-9667	N
Amoco	Charles Lamb	14th & Corcoran NW	232-7408	Y
Amoco	William Laski	M.L. King Jr. Ave.	--------	Y
Chevron	Ghulam Abbas	2300 Penn. Ave. SE	581-7080	N
Chevron	Woodrow Royce	4885 MacArthur Blvd NW	338-3039	Y
Chevron	----------	4861 Mass. Ave. NW	362-2639	Y
Chevron	Bob Shelton	Wisconsin & Q Sts., NW	333-0538	Y
Citgo	Tom Hartman	1905A 9th St. NE	832-8930	N
Exxon	Heinrich Weiss	1201 Penn. Ave. SE	546-8633	Y
Exxon	L. Davis	4501 14th St. NW	291-9485	N
Exxon	F. Ali Chaudry	3540 14th St. NW	234-0026	Y
Exxon	Jim Turner	3201 Penn. Ave. SE	--------	N
Exxon	Kay Yusefi	1925 Bladensburg Rd NE	526-6986	Y
Merit	Jim Nagels	1801 New York Ave. NE	832-0690	Y
Mobil	Sean Missaghi	3820 Minnesota Ave. NE	388-5722	Y
Mobil	L.B. Gam	400 Florida Ave. NE	543-8457	Y
Shell	Adel Bejanni	2501 Penn. Ave. SE	--------	N
Sunoco	Rostam Dastani	1248 Penn. Ave. SE	547-8623	N
Sunoco	Raza Shaikh	4653 S. Capitol St. SE	--------	N
Sunoco	Ricardo	2643 Virginia Ave., NW	333-4648	N
Sunoco	Mel Tumlin	101 New York Ave. NE	--------	Y
Texaco	Myong K. Kim	1022 Penn. Ave. SE	543-6725	Y
Texaco	Mr. Zaidi	2201 Georgia Ave. NW	234-8666	N
Texaco	Franklin Murray	3011 M.L. King Jr., SE	562-3600	Y
indpdnt	Johnny	801 M St. NW	898-4182	N
indpndt	Ping	2713 Good Hope Rd. SE	581-3558	
indpndt	J. Keypeghain	1576 Wisconsin Ave. NW	965-3123	N
indpndt	----------	Bladensburg Road NE	--------	N

[3] This column indicates (Y = yes; N = no) whether the service station complied with federal pump labeling requirements.

Table 2: Fuel Analysis Results for the 1992/93 Oxyfuel Program

Brand	Address	Percent Oxygen-by-Weight for Various Octane Ratings				
		86	87	89	93	94
Amoco	2500 Penn Ave. SE	N/A	2.67	2.60	2.49	N/A
Amoco	908 Florida Ave. NW	N/A	2.71	N/A	2.60	N/A
Amoco	14th & Corcoran NW	N/A	2.67	2.71	2.64	N/A
Amoco	M.L. King Jr., Ave. SE	N/A	2.52	2.53	2.57	N/A
Chevron	2300 Penn. Ave. SE	N/A	2.64	2.57	2.69	N/A
Chevron	4885 MacArthur Blvd. NW	N/A	2.62	2.60	2.78	N/A
Chevron	4861 Mass. Ave. NW	N/A	2.64	2.58	2.78	N/A
Chevron	Wisconsin & Q Sts. NW	N/A	2.66	2.58	2.80	N/A
Citgo	1905A 9th St. NE	N/A	2.66	2.56	2.78	N/A
Exxon	1201 Penn. Ave. SE	N/A	2.52	2.48	2.62	N/A
Exxon	4501 14th St. NW	N/A	2.66	2.59	2.76	N/A
Exxon	3540 14th St. NW	N/A	2.79	2.59	2.74	N/A
Exxon	3201 Penn. Ave. SE	N/A	2.59	N/A	2.64	N/A
Exxon	1925 Bladensburg Rd. NE	N/A	2.73	2.71	2.68	N/A
Merit	1801 New York Ave. NE	N/A	2.69	2.65	2.71	N/A
Mobil	3820 Minnesota Ave. NE	N/A	2.57	2.58	2.60	N/A
Mobil	400 Florida Ave. NE	N/A	2.67	2.62	2.60	N/A
Shell	2501 Penn. Ave. SE	N/A	2.66	2.68	2.77	N/A
Sunoco	1248 Penn. Ave. SE	2.62	2.75	2.69	2.73	2.86
Sunoco	4653 S. Capitol St. SE	2.64	2.68	2.66	2.73	2.69
Sunoco	2643 Virginia Ave. NW	2.66	2.64	2.68	2.71	2.75
Sunoco	101 New York Ave. NE	2.71	2.73	2.73	2.66	2.64
Texaco	1022 Penn. Ave. SE	N/A	2.56	2.63	2.63	N/A
Texaco	2201 Georgia Ave. NW	N/A	2.70	2.71	2.71	N/A
Texaco	3011 M.L. King Jr. SE	N/A	2.56	2.59	2.55	N/A
indpdnt	801 M St. NW	N/A	N/A	N/A	2.68	N/A
indpdnt	2713 Good Hope Rd. SE	N/A	2.65	2.62	2.63	N/A
indpdnt	1576 Wisconsin Ave. NW	N/A	2.67	2.65	2.80	N/A
indpdnt	Bladensburg Rd. NE	N/A	N/A	N/A	2.35	N/A
Average oxygen content by weight-percent		2.66	2.65	2.62	2.67	2.74

III. The Gasoline Distribution Network

Two types of service stations were inspected; those affiliated with major oil companies (Texaco, Amoco, Chevron, etc.) and independent stations. Most stations affiliated with a major oil company are supplied from a common terminal in northern Virginia or Maryland. This distribution terminal is supplied by a pipeline directly from company refineries. Table 3 lists each major chain sampled in the District of Columbia, the location of their regional distribution terminal and how that terminal is supplied. All companies listed below oxygenate their gasoline at the refinery and ship it as a final product.

Table 3: Regional Terminals for Major Oil Companies

Company	Location of Regional Terminal	How Regional Terminal is Supplied	Pipeline Origin or Location of Refinery
Amoco	Fairfax, VA	Via Colonial Pipeline	Texas City, TX
Chevron	Fairfax, VA	Via pipeline	TX, MI
Mobil	Manassas, VA	Via Colonial Pipeline	Beaumont, TX
Sunoco[1]	Baltimore, MD	Via pipeline	TX
Texaco	Fairfax, VA	Via Colonial Pipeline	Port Arthur, TX and LA

[1] Sunoco's premium gasoline (94 octane) is refined and blended in Pennsylvania and barged to Baltimore.

The independent stations, and a few stations affiliated with large oil companies purchase from local gasoline distributors. Local distributors obtain their fuel from the major terminals in northern Virginia or Maryland. Local distributors often carry several brands of gasoline. By law, any retail station affiliated with an oil company, whether buying from a local distributor or a major terminal, must carry its parent company's product. Independent stations, however, purchase gasoline based on the cheapest fuel available. The gasoline distributed in the District of Columbia metropolitan area is supplied by refineries that are aware of oxygenated fuel requirements. As a result, independent stations sell oxygenated fuel products even if the station's management is unaware of the oxyfuel program requirements.